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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/760,454	01/21/2004	Sung-Wook Lee	P-0645	1387
34610	7590	09/23/2004	EXAMINER	
FLESHNER & KIM, LLP P.O. BOX 221200 CHANTILLY, VA 20153			WILSON, SCOTT R	
			ART UNIT	PAPER NUMBER
			2826	

DATE MAILED: 09/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/760,454

Applicant(s)

LEE, SUNG-WOOK

Examiner

Scott R. Wilson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1-10 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee. As to claim 1, Lee, Figure 2A, discloses (paragraphs 0028 and 0029) the front substrate of a plasma display panel (PDP) including a colorant-added upper dielectric layer.

As to claim 2, Lee discloses (paragraph 0029) that the colorant controls light transmittance.

As to claim 3, Lee discloses (paragraph 0031) that the colorant may be Nd_2O_3 .

As to claim 4, Lee discloses (paragraph 0031) that the colorant, which may be Nd_2O_3 or CoO is added in the range of 0 to 30 wt %.

As to claim 5, the device of Lee would necessarily have to be formed in order to function, so that the method comprising the means of forming the device is inherent in the device structure itself.

As to claim 6, Lee discloses (paragraph 0029) that the colorant controls light transmittance.

As to claim 7, Lee discloses (paragraph 0031) that the colorant may be Nd_2O_3 .

As to claim 8, Lee discloses (paragraph 0031) that the colorant, which may be Nd_2O_3 or CoO is added in the range of 0 to 30 wt %.

As to claim 9, Lee discloses (paragraph 0030) that the step of forming the upper dielectric layer comprises forming glass powder with a colorant added therein at a prescribed rate; forming a dielectric paste by mixing the glass powder, a binder and a solvent, coating the dielectric paste at the entire surface

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of the upper glass substrate with a transparent electrode and a bus electrode formed thereon to form a dielectric paste layer; and firing the dielectric paste layer.

As to claim 10, Lee discloses (paragraph 0029) that the upper dielectric layer is formed by mixing colorant in glass powder.

As to claim 20, Lee discloses (paragraph 0031) that the glass particle size is 1 μ m to 5 μ m.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11-17 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Onoda et al.. As to claim 11, Lee discloses the invention of claim 10, as described above. Lee does not disclose expressly the parent glass formed from PbO-B₂O₃-SiO₂-Al₂O₃-MgO based glass. Onoda et al. discloses (col. 1, lines 37-39) a front substrate for a plasma display panel comprising PbO-B₂O₃-SiO₂-Al₂O₃-MgO based glass. At the time of invention, it would have been obvious to a person of ordinary skill in the art to form the glass of Lee with the composition of Onoda et al.. The motivation for doing so would have been to have a thermal expansion coefficient which satisfies a predetermined relation with the glass substrate (Onoda et al., col. 1, lines 21-23). Therefore, it would have been obvious to combine Onoda et al. with Lee to obtain the invention as specified in claim 11.

As to claim 12, Lee discloses (paragraph 0029) that the colorant controls light transmittance.

As to claim 13, Lee discloses (paragraph 0031) that the colorant may be Nd₂O₃.

As to claim 14, Lee discloses (paragraph 0031) that the colorant, which may be Nd₂O₃ or CoO is added in the range of 0 to 30 wt %.

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As to claim 15, Lee discloses (paragraph 0031) that the colorant, which may be Nd_2O_3 and CoO is added in the range of 0 to 30 wt %.

As to claim 16, Onoda et al. discloses (col. 3, lines 61-64) a glass composition comprising PbO , B_2O_3 , SiO_2 and Al_2O_3 . Onoda et al. further discloses (col. 4, line 62) that BaO may be incorporated into the composition. Lee discloses (paragraph 031) that the colorant, which may be Nd_2O_3 is added in the range of 0 to 30 wt %.

As to claim 17, Onoda et al. discloses (col. 3, lines 61-64) a glass composition comprising PbO , B_2O_3 , SiO_2 and Al_2O_3 . Onoda et al. further discloses (col. 4, line 62) that BaO may be incorporated into the composition. Lee discloses (paragraph 031) that the colorant, which may be CoO is added in the range of 0 to 30 wt %.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Onoda et al. and further in view of Tanabe et al.. Lee in view of Onoda et al. discloses the invention of claim 14, as described above. Lee in view of Onoda et al. does not disclose expressly the parent glass formed from P_2O_5 - B_2O_3 - ZnO based glass. Tanabe et al. discloses (col. 2, lines 60-66) a front substrate for a plasma display panel comprising P_2O_5 - B_2O_3 - ZnO based glass. Also, Lee discloses (paragraph 0031) that the colorant, which may be Nd_2O_3 and CoO is added in the range of 0 to 30 wt %. At the time of invention, it would have been obvious to a person of ordinary skill in the art to form the glass of Lee in view of Onoda et al. with the composition of Tanabe et al.. The motivation for doing so would have been to have a thermal expansion coefficient which satisfies a predetermined relation with the glass substrate (Tanabe et al., col. 2, lines 40-56). Therefore, it would have been obvious to combine Tanabe et al. with Lee in view of Onoda et al. to obtain the invention as specified in claim 18.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Onoda et al. and further in view of Tanabe et al.. Lee in view of Onoda et al. discloses the invention of claim 14, as described above. Lee in view of Onoda et al. does not disclose expressly the parent glass formed from ZnO - B_2O_3 - BaO based glass. Tanabe et al. discloses (col. 2, lines 60-66) a front substrate for a plasma display panel comprising ZnO - B_2O_3 - BaO based glass. Also, Lee discloses (paragraph 0031) that the colorant, which may be Nd_2O_3 and CoO is added in the range of 0 to 30 wt %. At the time of invention, it

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would have been obvious to a person of ordinary skill in the art to form the glass of Lee in view of Onoda et al. with the composition of Tanabe et al.. The motivation for doing so would have been to have a thermal expansion coefficient which satisfies a predetermined relation with the glass substrate (Tanabe et al., col. 2, lines 40-56). Therefore, it would have been obvious to combine Tanabe et al. with Lee in view of Onoda et al. to obtain the invention as specified in claim 19.

As to claim 21, Lee discloses the invention of claim 9, as described above. Lee does not disclose expressly a firing time or temperature for the dielectric paste. Onoda et al. discloses (col. 6, lines 1-2) that the dielectric paste was fired for 30 minutes, and Tables 1-5 disclose a firing temperature of 560°C to 580°C. At the time of invention, it would have been obvious to a person of ordinary skill in the art to form the glass of Lee with the firing time and temperature of Onoda et al.. The motivation for doing so would have been to produce a low melting point glass layer (Onoda et al., col. 6, lines 3-4). Therefore, it would have been obvious to combine Onoda et al. with Lee to obtain the invention as specified in claim 21.

Claims 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Mito et al.. As to claim 22, Lee discloses the invention of claim 5, as described above. Lee does not disclose expressly the formation of a green sheet layer. Mito et al. discloses (Abstract) that a front substrate for a plasma display panel may be formed either by firing a paste or in the form of a green sheet. At the time of invention, it would have been obvious to a person of ordinary skill in the art to form the glass of Lee in the form of a green sheet. The motivation for doing so would have been to use a technique well-known in the art. Therefore, it would have been obvious to combine Mito et al. with Lee to obtain the invention as specified in claim 22.

As to claim 23, Lee discloses (paragraph 0029) that the upper dielectric layer is formed by mixing colorant in glass powder.

Claim 24-30, 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Mito et al. and further in view of Onoda et al.. As to claim 24, Lee in view of Mito et al. discloses the invention of claim 23, as described above. Lee does not disclose expressly the parent glass formed from PbO-B₂O₃-SiO₂-Al₂O₃-MgO based glass. Onoda et al. discloses (col. 1, lines 37-39) a front substrate for a plasma display panel comprising PbO-B₂O₃-SiO₂-Al₂O₃-MgO based glass. Mito et al.

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discloses (Abstract) that a front substrate for a plasma display panel may be formed either by firing a paste or in the form of a green sheet. At the time of invention, it would have been obvious to a person of ordinary skill in the art to form the glass of Lee with the composition of Onoda et al. and to form the glass of Lee in the form of a green sheet. The motivation for doing so would have been to have a thermal expansion coefficient which satisfies a predetermined relation with the glass substrate (Onoda et al., col. 1, lines 21-23) and to use a technique well-known in the art. Therefore, it would have been obvious to combine Mito et al. and Onoda et al. with Lee to obtain the invention as specified in claim 24.

As to claim 25, Lee discloses (paragraph 0029) that the colorant controls light transmittance.

As to claim 26, Lee discloses (paragraph 0031) that the colorant may be Nd_2O_3 .

As to claim 27, Lee discloses (paragraph 0031) that the colorant, which may be Nd_2O_3 or CoO is added in the range of 0 to 30 wt %.

As to claim 28, Lee discloses (paragraph 0031) that the colorant, which may be Nd_2O_3 and CoO is added in the range of 0 to 30 wt %.

As to claim 29, Onoda et al. discloses (col. 3, lines 61-64) a glass composition comprising PbO , B_2O_3 , SiO_2 and Al_2O_3 . Onoda et al. further discloses (col. 4, line 62) that BaO may be incorporated into the composition. Lee discloses (paragraph 031) that the colorant, which may be Nd_2O_3 is added in the range of 0 to 30 wt %.

As to claim 30, Onoda et al. discloses (col. 3, lines 61-64) a glass composition comprising PbO , B_2O_3 , SiO_2 and Al_2O_3 . Onoda et al. further discloses (col. 4, line 62) that BaO may be incorporated into the composition. Lee discloses (paragraph 031) that the colorant, which may be CoO is added in the range of 0 to 30 wt %.

Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Onoda et al. and further in view of Tanabe et al. and further in view of Mito et al.. Lee in view of Onoda et al. discloses the invention of claim 27, as described above. Lee in view of Onoda et al. does not disclose expressly the parent glass formed from P_2O_5 - B_2O_3 - ZnO based glass, nor that the glass layer is formed as a green sheet. Tanabe et al. discloses (col. 2, lines 60-66) a front substrate for a plasma display panel comprising P_2O_5 - B_2O_3 - ZnO based glass. Lee discloses (paragraph 0031) that the colorant, which may be

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Nd_2O_3 and CoO is added in the range of 0 to 30 wt %. Mito et al. discloses (Abstract) that a front substrate for a plasma display panel may be formed either by firing a paste or in the form of a green sheet. At the time of invention, it would have been obvious to a person of ordinary skill in the art to form the glass of Lee in view of Onoda et al. with the composition of Tanabe et al. as a green sheet. The motivation for doing so would have been to have a thermal expansion coefficient which satisfies a predetermined relation with the glass substrate (Tanabe et al., col. 2, lines 40-56), and to use a technique well-known in the art. Therefore, it would have been obvious to combine Tanabe et al. and Mito et al. with Lee in view of Onoda et al. to obtain the invention as specified in claim 31.

Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Onoda et al. and further in view of Tanabe et al. and further in view of Mito et al.. Lee in view of Onoda et al. discloses the invention of claim 14, as described above. Lee in view of Onoda et al. does not disclose expressly the parent glass formed from $\text{ZnO-B}_2\text{O}_3\text{-BaO}$ based glass. Tanabe et al. discloses (col. 2, lines 60-66) a front substrate for a plasma display panel comprising $\text{ZnO-B}_2\text{O}_3\text{-BaO}$ based glass. Lee discloses (paragraph 0031) that the colorant, which may be Nd_2O_3 and CoO is added in the range of 0 to 30 wt %. Mito et al. discloses (Abstract) that a front substrate for a plasma display panel may be formed either by firing a paste or in the form of a green sheet. At the time of invention, it would have been obvious to a person of ordinary skill in the art to form the glass of Lee in view of Onoda et al. with the composition of Tanabe et al. as a green sheet. The motivation for doing so would have been to have a thermal expansion coefficient which satisfies a predetermined relation with the glass substrate (Tanabe et al., col. 2, lines 40-56) and to use a technique well-known in the art. Therefore, it would have been obvious to combine Tanabe et al. and Mito et al. with Lee in view of Onoda et al. to obtain the invention as specified in claim 32.

As to claim 33, Lee discloses (paragraph 0031) that the glass particle size is $1\mu\text{m}$ to $5\mu\text{m}$.

As to claim 34, Lee discloses the invention of claim 22, as described above. Lee does not disclose expressly a firing time or temperature for the dielectric paste. Onoda et al. discloses (col. 6, lines 1-2) that the dielectric paste was fired for 30 minutes, and Tables 1-5 disclose a firing temperature of 560°C to 580°C . At the time of invention, it would have been obvious to a person of ordinary skill in the

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art to form the glass of Lee with the firing time and temperature of Onoda et al.. The motivation for doing so would have been to produce a low melting point glass layer (Onoda et al., col. 6, lines 3-4) Therefore, it would have been obvious to combine Onoda et al. with Lee to obtain the invention as specified in claim 34.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott R. Wilson whose telephone number is 571-272-1925. The examiner can normally be reached on M-F 8:30 - 4:30 Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on 571-272-1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

srw
September 15, 2004



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